

cement-spaces, with four inner and three outer angles. It is interesting that this variation should occur in a species in which the presence of five cement-spaces in the second upper molar (as distinguished from *four* in nearly all other Voles) is characteristic.

The specimen in which the variation occurs is now in my collection (no. 75). It is a very large male, and was killed by Mr. J. Lewis Bonhote, at Jerkin in Norway, on July 28, 1895.

2. On the Existence in Europe of Two Geographical Races, or Subspecies, of the Common Field Vole. By G. E. H. BARRETT-HAMILTON, F.Z.S.

[Received May 18, 1896.]

I wish to call attention to the existence in Europe of two distinct forms of the Common Field Vole (*Microtus agrestis*, Linn.). My own attention was first drawn to this fact on the receipt of some Voles, which Mr. J. Lewis Bonhote was good enough to collect for me in Norway. These Voles, although differing externally, especially in size, and in cranial characters from English specimens, possess dental characters which are identical with those of the Common Field Vole as found in England.

The existence of these two forms appears to have been noticed so long ago as 1841, in which year Jenyns¹ described as a new species (thus confirming the opinion of William Thompson of Belfast, to whom he wished to give the credit of the discovery) under the name of *Arvicola neglectus*, Thompson, some Voles collected by Thompson in Perthshire and Inverness-shire. Writing in 1841² and 1847³ De Selys-Longchamps made the suggestion that *M. agrestis* and *M. neglectus* might be only local races of the same species, but preferred to regard the two as distinct until their characters could be further studied. He stated that *M. agrestis* was to be found in Sweden and Norway, from Scania to 66 degrees of north latitude, but not in the high mountains; and that it was also reported from Denmark and Finland. *M. neglectus*, on the other hand, had a more southern distribution, embracing England, Scotland, Belgium, France north of the Seine and west of the Moselle, and possibly the Pyrenees. In 1856 Dehne reported it from Saxony; but subsequent writers, including Blasius⁴, Fatio⁵, and Bell⁶, have regarded it as a variety of *M. agrestis*, although the latter recognized the difference between the two forms, for however distinct the extreme forms of

¹ Ann. of Nat. Hist. vol. vii. pp. 270-274 (1841).

² Bull. Acad. Sci. Bruxelles, Sept. 1841. In this paper the differences between *M. agrestis* and *M. arvalis*, formerly confused, appear to have been first clearly pointed out.

³ Revue Zoologique, Oct. 1847, pp. 305-312.

⁴ Säugethiere Deutschlands, pp. 369 & 372 (1857).

⁵ Les Campagnols du Bassin du Léman, p. 70 (1867).

⁶ British Quadrupeds, ed. 2, p. 326 (1874).

Microtus agrestis (typical).

No. in my Collection.	Date.	Sex.	Dimensions in mm.		Collector.	Locality.
			Head and body.	Tail. Hind foot.		
No. 74.....	27/7/95	♂	153	25 20	J. Lewis Bonhote.	Jerkin, Norway.
75.....	28/7/95	♂	160	35 20	"	"
76.....	29/7/95	♀	165	40 20	"	"
79.....	29/7/95	♀	101	23 16	N. F. Ticehurst.	Brekkebygdalen, Norway, 2700 feet.
80.....	29/7/95	♂	113	28 15	"	"
.....	4/9/95	♂	132	31 19	Gustav Kolthoff.	Jemtland, Medalsågen.
.....	11/0/95	♀	124	36 16	"	"
.....	5/9/95	♀ (suckling young).	123	37 17	"	"
.....	4/9/95	♀ (suckling young).	131	39 17	"	"
.....	11/9/95	♀	124	35 17	"	"

¹ Mr. Bonhote's measurements appear to be excessive, but there is no doubt that the animals were very large ones, both from the appearance of the skins and also (a much safer test) of the skulls: Mr. Bonhote's measurements might be reduced a great deal before they would be equalled by even the largest of my British specimens, no. 47. The smaller specimens are not fully grown.

Microtus agrestis neglectus.

No. in my Collection.	Date.	Sex.	Dimensions in mm.		Collector.	Locality.
			Head and body.	Tail. Hind foot.		
No. 47 ...	31/5/94	♂	123	17	J. A. Coward.	Longdendale, East Cheshire.
*W. 86 ...	29/6/94	♂	120	33	W. E. de Winton.	Grattonbury, Herefordshire.
No. 46 ...	19/6/94	♂	118	33	J. A. Coward.	Cheshire.
*W. 83 ...	26/6/94	♂	114	33	W. E. de Winton.	Herefordshire.
(5) *W. 85 ...	28/6/94	♀	112	33	"	"
*W. 33 ...	12/5/94	♂	112	32	"	"
65 ...	19/5/95	♀	112	28	G. H. Cason Haigh.	Lincolnshire.
67 ...	30/8/95	♀	112	27	"	"
95 ...	14/1/96	♂	108	30	"	"
185 ...	20/2/96	♀	108	22	"	"
94. 6. 6. 18 ...	20/5/95	♂	103	34	Oldfield Thomas.	Guines, Pas de Calais.
(Brit. Mus. Coll.) 93 ...	27/12/95	♂	90	23	G. E. H. B.-H.	Dinan, Brittany.

The following measurements will show the difference in size between two skulls of the Northern form and two of the largest British specimens which I could lay hands on:—

Greatest length of skull in millimetres	<i>M. agrestis</i> , No. 74.	<i>M. agrestis neglectus</i> , *No. W. 86.
Greatest breadth (at zygoma)	No. 75. 27.5	No. 47. 24
	17	15

* The specimens marked thus were kindly lent to me by Mr. W. E. de Winton and are the largest in his collection.

M. agrestis and *M. neglectus* may be, there can hardly fail to exist, in countries on the boundary-line of their respective ranges, intermediates whose presence would render it impossible to regard the two as distinct species. No doubt this was the right course to take so long as there was only open to naturalists the binomial system of nomenclature. It seems to me, however, that there is here a good case for the use of the trinomial system, especially as it can be done without inventing any new name.

The Voles constitute so difficult a genus that it is not surprising that the distinguishing characters laid down by even such good naturalists as Jenyns and De Selys-Longchamps are not very clear, especially as they appear to have been given partially with a view to distinguish *M. neglectus* from the Continental species *M. arvalis*, which was at that time supposed to occur in Great Britain, or to be represented there by a supposed nearly allied species *M. britannicus*; while, to further add to the confusion of ideas, the differences between *M. agrestis* and *M. arvalis* were very imperfectly recognized, if at all. I think, however, that De Selys-Longchamps's remarks show that he applied the name of *neglectus* to one of the forms to which this paper refers: hence, if it be considered desirable, as I submit it is, to distinguish these two distinct forms by different names, the British and Southern form should, I think, be distinguished as *M. agrestis neglectus*, Jenyns, while the name of *M. agrestis* (Linn.) should be restricted to the more Northern form.

The following are the characters of the two forms or subspecies:—

MICROTUS AGRESTIS (Linn.).

This is a large Vole reaching when adult a length (head and body) of 130 millimetres and upwards. It differs in coloration from the Southern form, the upperside wanting the reddish tinge of British specimens, and the underside being of a purer white colour, most British examples having the underside washed with yellow. The skulls of the Northern form are much larger and stronger than those of the Southern, and the postorbital and other crests are more prominent. The whole skull is very Lemming-like in appearance, being much flattened and having the zygomatic arch very deep.

Mr. Bonhote informs me that the Norway Voles were very Lemming-like in appearance when alive and he found them inhabiting the same burrows as Lemmings.

MICROTUS AGRESTIS NEGLECTUS, Jenyns.

This is a smaller animal, not averaging more than about 110 millims. when fully grown. It may be distinguished by the characters given above, viz., the size, cranial characters, and coloration. There is usually a reddish tinge on the upper surface of the adults and a yellowish wash to the belly, especially in summer, which, when present, is very distinctive.

Distribution.—These two subspecies seem to be distributed, roughly speaking, in the manner stated by De Selys-Longchamps in 1847, in fact it would be impossible to add to or correct what he has said on this point without examining more specimens than are at present available. The fact that the two French specimens which I have been able to examine are of the *neglectus* form is very interesting and confirms De Selys-Longchamps's statements. There are no German specimens in the British Museum collection, but Dehne¹ has stated that *M. agrestis neglectus* occurs fairly commonly in Saxony, near Penig and Lössnitz, while Fatio found it in the Hasli Thal, in Switzerland.

To show the differences in size between the two races, I give the dimensions (see pp. 600, 601).

The measurements are taken from the ten largest British specimens I could lay hands upon, and I have added to them those of the only two French specimens which were available.

In all cases, except those of Mr. Bonhote's specimens, the measurements of the tails were taken so as not to include the last hairs. The specimens kindly collected for me by Messrs. Coward and Caton Haigh were measured by Mr. F. Metcalfe of Cambridge; the dimensions of the remainder were taken by the collectors. It will be seen that the length of an average British specimen runs to about 106 millimetres, while anything above that must be regarded as large. The two largest British specimens I have been able to examine are my own no. 47, sent me by Mr. Coward from Cheshire, and Mr. de Winton's no. W. 86 from Herefordshire. These two somewhat approach the younger Norway specimens in size and characters, and these are the only two that do so out of numerous specimens examined.

3. Contributions to the Anatomy of Picarian Birds.— Part III. On some Points in the Anatomy of the Kingfishers. By FRANK E. BEDDARD, M.A., F.R.S., Prosecutor to the Society.

[Received May 18, 1896.]

The family Alcedinidæ shows more structural variation within its own limits than any other family of Picarian Birds.

The first to call attention to this was Prof. Garrod, who remarked in describing² the *tensores patagii* of various Passerine and Picarian Birds—"In the Alcedinidæ the differences are so considerable in the several genera that I reserve the description of the muscle in this order for a future occasion." Again, in referring to the course of the leg-veins he pointed out the abnormal con-

¹ A. Dehne in 'Allgemeine deutsche naturhistorische Zeitung,' new series, vol. ii. pp. 212 and 223 (1856).

² "On some Anatomical Peculiarities which bear upon the Major Divisions of the Passerine Birds.—Pt. I.," P. Z. S. 1877, p. 512.